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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/598,736	06/21/2000	Toru Takayama	SEL 189	5820

7590

10/10/2006

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EXAMINER
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VU, HUNG K

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/598,736	<b>Applicant(s)</b> TAKAYAMA ET AL.	
	<b>Examiner</b> Hung Vu	<b>Art Unit</b> 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-3,5,10-15,28-39 and 64-120 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 28-39 is/are allowed.  
6) ☒ Claim(s) 1-3,5,10-15 and 64-120 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5 and 115 are rejected under 35 U.S.C. 102(b) as being anticipated by Oikawa et al. (PN 4,770,948, of record).

Oikawa et al. discloses, as shown in Figures 5 and 7, a semiconductor device, the semiconductor device comprising,

a wiring comprising tungsten form over a substrate (1), the wiring including a gate electrode (5) formed over a substrate (1),

wherein the wirings includes argon, and

wherein an amount of sodium contained within the wiring is equal to or less than 0.3 ppm.

Regarding claim 5, Oikawa et al. discloses the substrate comprises a silicon substrate.

Regarding claim 115, Oikawa et al. discloses the wiring comprises a tungsten film.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 10-11 and 13 rejected under 35 U.S.C. 103(a) as being unpatentable over Oikawa et al. (PN 4,770,948, of record).

Regarding claims 3, 10-11, 13, although Oikawa et al. does not teach the thickness of the wiring, the electrical resistivity and the internal stress, the line width, the resistance, as that claimed by Applicants, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the wiring having a desired thickness, resistivity, internal stress, line width, or resistance, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

3. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oikawa et al. (PN 4,770,948, of record) in view of Ikeda et al. (JP8-153722, of record)

Oikawa et al. discloses the invention substantially as claimed, including the device as cited in the rejection above. Oikawa et al. does not disclose the wiring is used as a gate electrode of a TFT. However, Ikeda et al. discloses the wiring is used as a gate electrode of a TFT or MOS with a semiconductor film (104). Note Figure 13 of Ikeda et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the wiring of

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Oikawa et al. and Prall et al. as the gate electrode for the TFT, such as taught by Ikeda et al. in order to increase the circuitry density.

4. Claim 2 and 64-92, 103-114, 116-120 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oikawa et al. (PN 4,770,948, of record) in view of Okazaki (PN 5,477,359). Oikawa et al. discloses the invention substantially as claimed, including the device as cited in the rejection above. Oikawa et al. does not disclose the substrate is a glass substrate and the base insulating film comprising silicon nitride or silicon oxynitride. However, Okazaki discloses a substrate (301) is a glass substrate and a base insulating film (304) comprising silicon nitride or silicon oxynitride. Note Figure 14 of Okazaki. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the substrate of Oikawa et al. as the glass substrate and the base insulating film comprising silicon nitride or silicon oxynitride, such as taught by Okazaki in order to improve the circuit performance.

Regarding claims 65-67, 84-86, 106-108, although Oikawa et al. and Okazaki do not disclose other inert element (Xe or Kr) is contained within the wiring at an amount equal to or less than 0.1 atom%. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the wiring having a desired amount of other inert element, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

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Regarding claims 68, 69 and 71, 74, 77, 78, 80, 83, 87, 88, 90, 103, 109, 110, 112, although Oikawa et al. and Okazaki do not teach the thickness of the wiring, the line width, the internal stress, the resistance, as that claimed by Applicants, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the wiring having a desired thickness, line width, internal stress, or resistance, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 70, although Oikawa et al. and Okazaki disclose the wiring is used as a gate electrode of TFT.

Regarding claims 14, 15, 72, 73, 81, 82, 91, 92, 113, 114, Oikawa et al. and Okazaki disclose the semiconductor device is an active matrix type liquid crystal display, an active matrix type EL display, or an active matrix type EC display, or a video camera, a digital camera, a projector, a goggle type display, a car navigation system, a personal computer, or a portable information terminal.

5. Claims 93-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oikawa et al. (PN 4,770,948, of record) in view of Okazaki (PN 5,477,359) and further in view of Prall et al. (PN 5,341,016, of record) ).

Oikawa et al. and Okazaki disclose the claimed invention including the semiconductor device, as explained in the rejection above. Oikawa et al. and Okazaki do not disclose an insulating film

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comprising SiOxNy formed over the wiring. However, Prall et al. discloses an insulating film (21) comprising SiOxNy formed over the wiring. Note Figures 5 and 7 of Prall et al.. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form a cap layer over the wiring of Oikawa et al. and Okazaki, such as taught by Prall et al. in order to increase the adhesion of the wiring and to protect the wiring during etching.

Regarding claims 94-96, although Oikawa et al., Okazaki and Prall et al. do not disclose other inert element (Xe or Kr) is contained within the wiring at an amount equal to or less than 0.1 atom%. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the wiring having a desired amount of other inert element, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 97, 98, 100, although Oikawa et al., Okazaki and Prall et al. not teach the thickness of the wiring, the line width, the internal stress, the resistance, as that claimed by Applicants, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the wiring having a desired thickness, line width, internal stress, or resistance, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claim 99, Oikawa et al., Okazaki and Prall et al. disclose the wiring is used as a gate

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electrode of TFT.

Regarding claims 101, 102, Oikawa et al., Okazaki and Prall et al. disclose the semiconductor device is an active matrix type liquid crystal display, an active matrix type EL display, or an active matrix type EC display, or a video camera, a digital camera, a projector, a goggle type display, a car navigation system, a personal computer, or a portable information terminal.

***Allowable Subject Matter***

6. Claims 28-39 are allowed.

***Response to Arguments***

7. Applicant's arguments filed 06/29/06 have been fully considered but they are not persuasive.

It is argued, at page 3 of the Remarks, that Oikawa discloses a concentration of sodium in a target, not within the metal film of the wiring, therefore, the sodium concentration of the target is not the same as the sodium concentration in the metal film of the wiring. The Examiner is agreed. In fact, the sodium concentration should be less than that. However, the sodium concentration still meets the recited limitation of "equal to or less than". Note that the arguments of counsel cannot take the place of evidence in the record. In re Schulze, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965); In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997) ("An assertion of what seems to follow from common experience is just attorney argument and not the kind of actual evidence that is required to rebut a prima facie case of obviousness."). See



MPEP 716.01(c) for examples of attorney statements which are not evidence and which must be supported by an appropriate affidavit or declaration.

It is argued, at page 4 of the Remarks, that Oikawa does not disclose a sodium concentration in other metals, such as tungsten. This argument is not convincing because Oikawa discloses, as shown in Col. 7, lines 56-65, that other metals can be used, such as tungsten.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Tuesday to Friday 6:00-4:30.

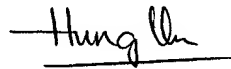
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (571) 272 - 1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vu

September 30, 2006

A handwritten signature in black ink, appearing to read "Hung Vu", written over a horizontal line.

Hung Vu

Primary Examiner